

REMARKS

The June 19, 2007 Office Action was based upon pending Claims 23-29 and 31-40. The Examiner rejected Claims 23-29 and 31-40. By this amendment, Applicant has amended Claims 23, 31 and 35, canceled Claims 27 and 28, and added new Claims 41-45. Thus, after entry of this Amendment, Claims 23-26, 29 and 31-45 are pending and presented for further consideration.

Claim Rejections

The Examiner provisionally rejected Claims 23-29 and 31-40 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over Claims 9-14 of Applicant's co-pending U.S. Application No. 10/760,126.

The Examiner rejected Claims 23-29, 31, 34-37 and 40 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,246,214 issued to Oglesbee ("the Oglesbee patent") in view of U.S. Patent No. 5,621,299 issued to Krall ("the Krall patent").

The Examiner also rejected Claim 32 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Patent No. 5,978,236 issued to Faberman, et al. ("the Faberman patent").

In addition, the Examiner rejected Claim 33 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Patent No. 6,170,062 issued to Henrie ("the Henrie patent").

Finally, the Examiner rejected Claims 38 and 39 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Publication No. 2002/0021164 to Fugate, et al. ("the Fugate publication").

Provisional Double Patenting Rejection of Claims 23-26, 29 and 31-40

Applicant acknowledges the provisional double patenting rejection; however, since no claims in the co-pending application have been allowed, a terminal disclaimer is not yet

appropriate. Applicant will submit a terminal disclaimer when the identified claims have been allowed in both applications if the claims have not otherwise been amended to overcome the double patenting rejection.

Rejection of Claims 23-26, 29 and 31-40 under 35 U.S.C. § 103(a)

The Examiner rejected Claims 23-26, 29, 31, 34-37 and 40 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent. The Examiner also rejected Claim 32 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Faberman patent. In addition, the Examiner rejected Claim 33 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Henrie patent. Finally, the Examiner rejected Claims 38 and 39 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Fugate publication.

Independent Claim 23

Focusing in particular on Claim 23 and the embodiment shown in Figures 2 and 3, a method for controlling battery power comprises selectively providing a first external power source (e.g., an AC adapter) 228 or a second external power source (e.g., a USB interface) 230 to a device coupled to a system power terminal (V-LOAD) as shown in Figure 2. Referring to Figure 3, an internal battery is coupled to the system power terminal (V-LOAD) via a series-connected bi-directional transistor 300. The method also comprises sensing a voltage difference between the system power terminal (V-LOAD) and a positive terminal of the internal battery (V-BATTERY) and generating a feedback control signal based on the voltage difference and a voltage level at a control terminal of the bi-directional transistor 300. For example, a battery control loop 304 carries out these functions and has input terminals coupled to the system power terminal, the positive terminal of the internal battery and the control terminal of the bi-directional transistor 300.

The method further comprises translating the feedback control signal into a linearly adjustable voltage for driving the bi-directional transistor 300. For example, a pass element driver 302 receives the feedback control signal from the battery control loop 304 and generates

the linearly adjustable voltage for the control terminal of the bi-directional transistor 300. The method determines a charging mode of operation when the voltage difference indicates that the system power terminal has a higher voltage than the positive terminal of the internal battery by a first predefined amount and determines a discharging mode of operation when the voltage difference indicates that the system power terminal has a lower voltage than the positive terminal of the internal battery by a second predefined amount.

During the charging mode, the internal battery is charged by linearly regulating the bi-directional transistor 300 with the linearly adjustable voltage at the control terminal of the bi-directional transistor 300 to conduct a charging current in a first direction from the system power terminal to the positive terminal of the internal battery. During the discharging mode, the internal battery is discharged by linearly regulating the bi-directional transistor 300 with the linearly adjustable voltage at the control terminal of the bi-directional transistor 300 to conduct a discharging current in a second direction from the positive terminal of the internal battery to the system power terminal. The level of current provided to the internal battery during the charging mode or current supplied by the internal battery during the discharging mode varies with the level of the linearly adjustable voltage at the control terminal of the bi-directional transistor 300.

None of the cited references discloses a configuration that generates a feedback control signal based on a voltage level at a control terminal of a bi-directional transistor and a voltage difference between a system power terminal and a positive terminal of an internal battery, wherein the feedback control signal is translated into a linearly adjustable voltage for driving the bi-directional transistor. Referring to Figure 2 of the Oglesbee patent in particular, a safety transistor 203 is coupled between an input terminal 208 and a battery cell 201. A charge regulator system 205 and a discharge regulator system 234 can configured the safety transistor 203 for charging or discharging the battery cell 201. The charge regulator system 205 relies on a voltage protection circuit 206 to limit the voltage at the input terminal 208 for normal operations. See Col. 4, lines 35-49. The discharge regulator system 234 senses a battery cell condition (e.g., battery cell overcurrent, battery cell short circuit, battery cell overtemperature, battery cell undervoltage) and controls the safety transistor 203 to regulate, restrict or limit the discharge current. See Col. 4, lines 3-34.

Because the references cited by the Examiner do not disclose, teach or suggest generating a feedback control signal for driving a bi-directional transistor based on a voltage at a control terminal of the bi-directional transistor and a voltage difference between a system power terminal and a positive terminal and an internal battery, Applicant asserts that Claim 23 is patentably distinguished over the cited references and Applicant respectfully requests allowance of Claim 23.

Dependent Claims 24-26, 29, 40

Claims 24-26, 29 and 40, which depend from Claim 23, are believed to be patentable for the same reasons articulated above with respect to Claim 23, and because of the additional features recited therein.

Independent Claim 31

Although Claim 31 has different language than Claim 23, Claim 31 is believed to be patentable for similar reasons (where applicable), and because of the different features recited therein.

Dependent Claims 32-39

Claims 32-39, which depend from Claim 31, are believed to be patentable for the same reasons articulated above with respect to Claim 31, and because of the additional features recited therein.

New Claims 41-45

New Claims 41-45 have been added to more fully define the Applicant's invention and are believed to be fully distinguished over the prior art of record.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather,

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any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

In view of the foregoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested. If further issues remain to be resolved, the Examiner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved. Also, please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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